

P009 Recruitment of Orf44, an *ad hoc* transcriptional repressor, into a putative partition cassette in the archaeon *Sulfolobus*
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Sulfolobus NOB8H2 is a strain isolated from acidic hot springs at Noboribetsu, Japan. This strain harbours a 41 kb plasmid, pNOB8. The plasmid includes a putative partition cassette. This cassette consists of three genes: *orf44*, a *parB*-like gene and a *parA*-like gene. The protein encoded by *orf44* shares sequence homology with bacterial transcriptional repressors of the ArsR/SmtB family. Orf44 is characterized by a highly basic pI. These features suggested that Orf44 might be a DNA-binding protein. Orf44 was purified as a recombinant protein in *E. coli*. Gel filtration, analytical ultracentrifugation, SEC-MAL and chemical cross-linking experiments indicated that Orf44 is predominantly dimeric. Circular dichroism spectroscopy revealed that the protein is extremely thermostable. Electrophoretic mobility shift assays and DNase I footprinting studies showed that Orf44 is a DNA-binding protein contacting a palindromic sequence upstream of its own gene. The inverted repeat is positioned between the putative TATA box and the translation start site of *orf44*. This operator-like location suggests that Orf44 may repress the transcription of its own gene and that of *parB* and *parA* by binding to this box and disrupting the assembly of the transcription machinery at the promoter.